

EXPANSIBLE CHAMBER ENGINE WITH UNDULATING FLYWHEEL

Abstract

This engine 1 relies on a flywheel having a flywheel axis and an undulating cam surface. A piston with a roller at its base is positioned
5 in a cylinder such that the roller abuts the undulating cam surface at some radial distance from the flywheel axis. Thus, as the piston is pushed downward by combustion pressure in the cylinder, it pushes against the cam surface causing the flywheel to rotate. As the flywheel continues to rotate its undulating surface pushes the piston
10 back into position for a repetition of the cycle. The cam surface is configured to control at least one engine parameter such as compression ratio, duration of intake stroke, duration of exhaust stroke, duration of combustion stroke, duration of power stroke, compression stroke pattern, volumetric efficiency, or power stroke
15 pattern. More complex embodiments include one in which undulating surfaces are located on opposite faces of the same flywheel with separate pistons interacting with each face and one in which undulating surfaces are located on facing surfaces of two separate flywheels with pistons positioned between the flywheels. In the latter embodiment,
20 pistons can share the same cylinder.